REMARKS

Claims 1, 3, 5, 8, 10, 11, 14, and 22-28 are present in this application. Claims 1 and 10 are independent claims.

35 USC 112, second paragraph

Claims 5 and 8 have been rejected under 35 U.S.C. § 112, second paragraph.

Applicants have amended claim 5 by taking into consideration the recommendation presented in the Office Action. Applicants request that the rejection be reconsidered and withdrawn based on claim 5 as amended.

35 USC 103(a) – Osaka, Akamatsu

Claims 1, 3, 5, 8, 10, and 11 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 6,023,277 (Osaka) in view of U.S. Patent 6,313,866 (Akamatsu).

Applicants submit that at least the rejection of claim 10 fails to establish *prima facie* obviousness and must be withdrawn.

Claim 10 recites, among other things, "a generation unit generating three-dimensional image data from said two-dimensional image data."

The Office Action at page 7, second paragraph, alleges that Osaka teaches this claimed feature at column 21, lines 51-53 and 58-61.

Column 21, lines 50-54, discloses information pertaining to a second embodiment in Osaka. The disclosed second embodiment includes an optically directive control element (PDLC) 20. Osaka discloses that by controlling a voltage applied to optically directive control element 20, it is possible to switch between two and three dimensional displays (see paragraph bridging columns 18-19). The paragraph at column 21, lines 50-54, is in a section "Two- and Three-Dimensional Display Changeover Operation." The paragraph is provided below:

> "Further, effects similar to those of the second embodiment are obtained even if an arrangement is adopted in which the entirety of the checkered mask pattern constituting the stereoscopic display of the first embodiment is turned on and off."

Column 21, lines 56-65, discloses information pertaining to a third embodiment, in which similar to the first embodiment, a stereoscopic image can be presented in part of the display, rather than over the entirety of the display screen. The paragraph at column 21, lines 56-65, is provided below:

> "The second embodiment has been described with regard to an arrangement in which a changeover is made between two- and three-dimensional displays over the entirety of the display screen. However, processing similar to that of the first embodiment can be executed by forming the optically directive control element 20 as a matrix, placing a prescribed area of the element in the non-scattering state by partial application of voltage, and placing the remaining area of the element in the scattering state, thereby presenting a stereoscopic image in part of the display."

Applicants submit that neither of these paragraphs disclose a generation unit generating three-dimensional image data from two-dimensional image data.

Furthermore, the Office Action indicates that Osaka at column 21, lines 51-53, discloses "The stereoscopic-image-data processing unit 306 combines a pair of left and right image data..." Applicants submit that Osaka at column 21, lines 51-53 does not disclose "stereoscopic-image-data processing unit 306."

The Office Action indicates that Osaka at column 21, lines 58-61, discloses "The display control unit 303 receives stereoscopic-image data formed by the stereoscopic-image-data processing unit 306...and displays the received data." Applicants submit that Osaka at column 21, lines 58-61 does not disclose either "display control unit 303" or "stereoscopic-image-data processing unit 306."

For at least these reasons, Applicants submit that the rejection fails to establish *prima facie* obviousness for claim 10 and must be withdrawn.

Claim 1

Summary of the Present Invention

An aspect of the present invention is a multimedia information generation apparatus that generates, based on an input parameter, three-dimensional image display control information necessary for converting three-dimensional image data for enabling stereoscopic vision for a plurality of three-dimensional display schemes.

The present application discloses examples of three-dimensional display schemes, including "time-division scheme," "parallax barrier scheme," and "lenticular scheme." The present application discloses that data recorded for a particular display scheme generally lacks compatibility among different display schemes. As an example, the present application points out that data recorded so as to adapt to the time-division scheme cannot be displayed as it is on a three-dimensional display adapted to the parallax barrier scheme.

A problem that is addressed in the present application, is mismatch between three-dimensional data and the display scheme and associated display device for display of three-dimensional images. The present invention potentially accommodates multimedia information that can be used with different display devices that operate according to a plurality of display schemes.

Subsequently, the present invention provides all necessary control information for accommodating a plurality of display schemes and associated display devices. In particular, the present invention generates control information for a plurality of three-dimensional display schemes to be included in combination in multimedia information, such as in a multimedia file or transmitted as multimedia information over a network.

Osaka

Osaka discloses "parallax barrier scheme," "lenticular scheme," and a new display scheme "crossed-lenticular scheme." Osaka discloses an example of a three-dimensional display based on the "crossed-lenticular scheme." (col. 8, ll.31-44; see Fig. 1).

Akamatsu

Akamatsu does not use the term "scheme," but discloses an example stereoscopic image display apparatus where an image is displayed in a "time-division manner" and requires "shutter glasses." Akamatsu discloses a parallax barrier binocular type stereoscopic image display apparatus as another type of stereoscopic display apparatus. In the summary of the invention section of Akamatsu, Akamatsu discloses a three-dimensional image display apparatus that incorporates parallax control means that controls parallax amount of a second image signal so that a second image corresponding to the second three-dimensional image signal can be displayed in front of a first image corresponding to a first image signal.

Differences over Osaka and Akamatsu

Applicants had previously presented an argument that Akamatsu and Osaka are directed to display devices that display according to a single three-dimensional display scheme.

In response, the Examiner admits that Osaka fails to teach the claimed control information generation unit capable of generating, based on an input parameter, three-dimensional image display control information necessary for converting three-dimensional image data for enabling stereoscopic vision for a plurality of three-dimensional display schemes. Instead, the Examiner alleges that Akamatsu teaches this claimed feature (referring to col. 5, lines 6-14 and 17-23). In particular, The Examiner alleges that the three-dimensional image signals generated by the parallax control circuit 102 (Fig. 4) or depth information limiters 201,202 (Figs. 5, 7) of Akamatsu constitutes generated "control information" necessary for converting three-dimensional image data.

Applicants submit that one of ordinary skill would understand that the different arrangements in Figs. 4, 5, and 7 of Akamatsu involve different approaches to generating display images for one type of display scheme. It is Applicants understanding that, the Examiner broadly interprets "different display schemes" as including two three-dimensional images having different depth information, such that different display schemes means different depth information. Each difference in depth information means a different display scheme. Applicants

believe that the Examiner also appears to consider that different mechanisms for generating images having different depth information, such as Figs. 4, 5, and 7, means different display schemes.

Applicants disagree. Applicants submit that Akamatsu merely discloses intermediate processing steps for adjusting relative depth information for two images to be synthesized, but that the final three-dimensional image signal that is provided to the stereoscopic display 104 is for a single type of display scheme.

With respect to the claimed "capable of," it is Applicants understanding that the Examiner believes that Akamatsu discloses a device that is "capable of" generating control information for a plurality of three-dimensional display schemes, as it provides a parallax control circuit and a depth information limiter that are capable of generating a range of three-dimensional data having different depth information. Akamatsu does not disclose determining a plurality of depth information for a single display image. However, Applicants understand that it is the Examiner's position that because Akamatsu's invention is capable of controlling parameters such as parallax and depth information, the Examiner may consider such parameters to inherently teach control information such as parallax amount or depth, and that such parameters may be varied for target different display schemes.

In any case, the control information generation unit of the present invention generates control information necessary for a plurality of three-dimensional display schemes, for example, in providing multimedia information.

In order to clarify this aspect in the claimed invention, Applicants have amended claim 1 by deleting "capable of" from claim 1, in order to avoid an unintentional interpretation that "capable of" means "not necessarily in a single output."

In addition, Applicants have amended claim 1 to explicitly recite in the element "a multimedia information generation unit," "said control information including control information for said plurality of three-dimensional display schemes."

Applicants submit that unlike Osaka and Akamatsu, the present invention generates multimedia information for a plurality of three-dimensional display schemes that enables the data included in the multimedia information to be appropriately displayed on any of different types of display devices.

Claim 10

Claim 10 recites, among other things, display control information "supporting" a plurality of three-dimensional display schemes.

With respect to claim 10, the Examiner indicates that three-dimensional image synthesizer 103 of Akamatsu teaches both the claimed "first synthesis unit" and "data conversion unit." In particular, the Examiner alleges that column 5, lines 4-11 of Akamatsu teaches the claimed "first synthesis unit" and Figs. 5 and 7 of Akamatsu teaches the claimed "data conversion unit." The Examiner alleges that Akamatsu discloses that synthesis unit synthesizes two input three-dimensional images, such that one of ordinary skill would be capable of synthesizing images generated by Osaka. With regard to the claimed data conversion unit, the Examiner refers to Akamatsu's synthesizer 103 as being a "data conversion unit 103." The Examiner appears to imply that different display schemes chosen prior to image data being passed to the conversion unit 103, as shown in Figs. 5 and 7, satisfies the claimed converting three-dimensional image data based on a three-dimensional display scheme selected from among a plurality of three-dimensional display schemes.

Applicants submit that the Examiner's reasoning fails to take into consideration that the claimed "conversion unit" converts "said synthesized three-dimensional image data," which is provided by the "first synthesis unit." Claim construction provided in claim 10 dictates that the claimed first synthesis unit and conversion unit are not the same.

The Examiner's reasoning implies that Akamatsu's synthesizer 103 performs functions of both the claimed first synthesis unit and the claimed data conversion unit. Applicants submit that even if it could be argued that Akamatsu's synthesizer 103 forperforms elements of both claimed

elements,, Applicants submit that Akamatsu still fails to teach further conversion processing after the synthesis operation of synthesizer 103.

Subsequently, claim 10 has been amended to emphasize the converting operation performed on the synthesized image data by the "data conversion unit."

Furthermore, it is Applicants' understanding that the Examiner may be broadly interpreting Akamatsu as though it teaches a device that is capable of "supporting" a plurality of three-dimensional display schemes. Applicants have amended claim 10 to remove "supporting" and to explicitly recite

"three-dimensional display control information for a plurality of three-dimensional display schemes."

In particular, claim 10 has been amended to further include:

data conversion unit converting said synthesized three-dimensional image data, using a subset of the three-dimensional display control information for [[based on a three-dimensional display scheme selected from among]] said plurality of types of three-dimensional display schemes, [[supported by the three-dimensional image display control information]] into a format of a selected three-dimensional display scheme of said plurality of three-dimensional display schemes.

Applicants submit that even if it could be said that Akamatsu's alternative approaches in Figs. 4, 5, 7, and control over parallax and depth information, may be capable of generating a plurality of different three-dimensional image data, Akamatsu does not teach generating these plurality of three-dimensional image data, i.e., for a plurality of parallax or depth information, as an input to the synthesizer. Rather the image data input to the synthesizer of Akamatsu (generated by an alleged control information generation unit) would be for resulting depth information items. In other words, there would not be further processing of synthesized image data using parameters such as depth information.

Applicants submit that Akamatsu does not disclose processing of image data that has been synthesized in synthesizer 103, and much less the claimed conversion of synthesized three-dimensional image data using a subset of control information into a format of a selected three-dimensional display scheme.

For at least these reasons Applicants submit that Osaka and Akamatsu, either alone or in combination, fail to teach each and every claimed element as recited in the claims as amended. Applicants request that the rejection be reconsidered and withdrawn.

35 USC 103(a) – Osaka, Iizuka

Claims 14 and 22-28 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Osaka in view of U.S. Patent 6,657,655 (Iizuka). Applicants submit that this rejection is improper, since claim 14 depends from claim 1. In particular, Akamatsu is not cited in the ground of rejection.

In any case, claim 14, depends from claim 1 and relates to a "multimedia information reproduction apparatus."

Applicants submit that at least for the reasons above for claim 1, claim 14 is patentable as well.

Applicants request that the rejection be reconsidered and withdrawn.

CONCLUSION

In view of the above amendment, applicant believes the pending application is in condition for allowance.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact **Robert Downs** Reg. No. 48,222 at

the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

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